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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/543,281	04/05/2000	Guolin Ma	D0532/7031-GSE	6483

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EXAMINER

FERGUSON, LAWRENCE D

ART UNIT	PAPER NUMBER
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1774

17

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application N .

09/543,281

Applicant(s)

MA ET AL.

Examiner

Lawrence D Ferguson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☒ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Response to Amendment***

1. This action is in response to the amendment mailed December 26, 2002.

Claims 13 and 21-23 were amended and claims 1-31 are pending.

***Claim Rejections – 35 USC § 103(a)***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5-6, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buckingham et al. (U.S. 5,168,031) in view of Rosen et al. (U.S. 5,761,188).
4. Buckingham teaches the conventionality of air incidence and the recording layer ablated by an air-incident modulated laser beam (column 1, line 64 through column 2, line 1) having a low thermal conductivity for the optical recording medium (column 1, lines 46-51). Buckingham discloses an optical recording element comprising a substrate and a recording medium layer (column 3, lines 65-66) and a reflecting layer (column 8, line 64) that is metallic (column 9, lines 9-13). Buckingham discloses a spacer between the reflecting layer and the recording medium (column 9, lines 25-26) which is between

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the reflecting layer and the substrate. Buckingham discloses the spacer helping to control the thermal performance of the medium and having protecting properties (column 9, lines 26-28) where the spacer is a dielectric (column 9, lines 28-29).

Buckingham discloses a protective coating layer that can be made out of any material in contact with the recording layer or separated from it by an air gap (column 9, lines 51-

62). This protective coating material is analogous to a lubricant. Buckingham discloses

the recording medium is protected by an overcoat layer which is either in contact with the top surface of the recording medium or separated from it by a clean sealed air gap (claim 14). The recording layer exhibiting the Kerr effect is an experimental result and is

therefore a product by process. Additionally, in claims 1 and 11, "a coating system of

layers having a thermal conductivity that maintains the coating system of layers at a

temperature that does not cause more evaporation during read and write operations of

the same coating system of layers and of molecules adsorbed therein from an ambient

atmosphere than absent the read and write operations" is directed to a product by

process. "Even though product by process claims are limited by and defined by the

process, determination of patentability is based on the product itself. The patentability

of a product does not depend on its method of production. If the product in the product

by process claim is the same as or obvious from a product of the prior art, the claim is

unpatentable even though the prior product was made by a different process." In re

Thorpe, 227 USPQ 964, 966. Buckingham does not explicitly disclose the separation

between the recording layer and overcoat layer. However the spacer provides a

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separation between the recording layer and overcoat. Buckingham does not disclose a low thermal conductivity of a dielectric layer or protective layer.

Rosen teaches a multiple recording layer with a dielectric layer (column 2, lines 34-50), reflective layer (column 5, line 34) and protective layer (column 6, line 55).

Rosen teaches a dielectric layer acting as a protective layer so the high temperature does not deform the substrate (column 7, lines 15-19). Rosen teaches layer having low thermal conductivity used for protecting the substrate from deformation (column 8, lines 23-27). Buckingham and Rosen are analogous art because they are from the same field of multilayer recording media. It would have been obvious to one of ordinary skill in the art to include the low thermal conductive properties of Rosen in the dielectric and protective layers of Buckingham because Rosen teaches that giving layers high thermal conductivity for heat dissipation purposes is known to the art.

***Claim Rejections – 35 USC § 103(a)***

5. Claims 1-5 and 7-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen et al. (U.S. 5,761,188) in view of Lee et al. (U.S. 5,729,393)

6. Rosen discloses a multiple recording layer phase-change optical disk with a substrate and dielectric layer (abstract). Rosen discloses a metallic heat dissipation reflective layer (column 5, lines 33-34) and an amorphous to crystalline phase (column 5, line 53). Rosen discloses a solid spacer layer formed by deposition such as spin coating along with a protective layer (column 6, lines 43-55). Rosen discloses a dielectric layer acting as a protective layer so high temperature does not deform the

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substrate (column 7, lines 15-19). Rosen discloses a recording layer composed of Ge, Sb and Te (column 7, line 43). Rosen discloses one or more additional layers, such as a heat dissipation layer (column 7, lines 49-51) that have reflective properties that aid in regulating the thermal conductivity. Rosen discloses layers having low thermal conductivity helping to protect the substrate from deformation (column 8, lines 23-27).

~~The recording layer exhibiting the Kerr effect is an experimental result and is therefore a~~  
product by process. Additionally, in claims 1 and 11, "a coating system of layers having a thermal conductivity that maintains the coating system of layers at a temperature that does not cause more evaporation during read and write operations of the same coating system of layers and of molecules adsorbed therein from an ambient atmosphere than absent the read and write operations" is directed to a product by process. Utilizing evanescent coupling effects to decrease the spot size of the optical beam is an experimental result and is therefore a product by process. "Even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 227 USPQ 964, 966. Rosen does not disclose an air bearing assembly with sliding SIL and reduced spot size.

Lee teaches an air bearing assembly with a solid immersion lens (SIL) having a bottom surface facing the disk (column 1, lines 44-47) where the SIL is mounted to the slider (column 1, line 67). Lee discloses a flying slider (column 3, line 15) and reducing

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spot size (column 4, line 57). Rosen and Lee are analogous art because they are from the same field of recording mediums. It would have been obvious to one of ordinary skill in the art to incorporate the air bearing assembly with sliding SIL and reduced spot size of Lee to the recording medium of Rosen because Lee teaches that it is known in the art to incorporate this air bearing assembly with recording mediums.

### ***Response to Arguments***

7. Claim rejections under 35 USC 112, first paragraph are overcome due to Applicant's remarks.

The arguments in regards to rejection under 35 USC 103(a) as being unpatentable over Buckingham et al. (U.S. 5,168,031) in view of Rosen et al. (U.S. 5,761,188) have been considered but are unpersuasive. Applicant argues a person of ordinary skill in the art would not have been motivated to combine the teaching in Rosen of a layer with low thermal conductivity for protecting the substrate from deformation with the teachings of Buckingham, because Buckingham teaches an air-incident medium. Applicant lacks support for this argument. Buckingham teaches the conventionality of air incidence and the recording layer ablated by an air-incident modulated laser beam (column 1, line 64 through column 2, line 1) having a low thermal conductivity for the optical recording medium (column 1, lines 46-51). It would have been obvious to one of ordinary skill in the art to include the low thermal conductive properties of Rosen in the dielectric and protective layers of Buckingham because Rosen teaches that giving layers high thermal conductivity for heat dissipation purposes

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is known to the art and because Buckingham already teaches the conventionality of a low thermal conductivity of the optical recording medium, introducing coating layers having a low thermal conductivity for regulating heat dissipation would have been obvious, absent any evidence to the contrary. Applicant further argues, in an air-incident medium, there is no substrate on the light incident surface of the disk. This is not true because Buckingham discloses an optical recording element comprising a substrate and a recording medium layer (column 3, lines 65-66). Applicant argues the combination of Buckingham in view of Rosen teaches away from the desired combination because there is no motivation to 'include the low thermal conductive properties of Rosen in a dielectric and protective layers of Buckingham. Examiner respectfully disagrees because Buckingham teaches the conventionality of air incidence and the recording layer ablated by an air-incident modulated laser beam (column 1, line 64 through column 2, line 1) having a low thermal conductivity for the optical recording medium (column 1, lines 46-51). It would have been obvious to one of ordinary skill in the art to include the low thermal conductive properties of Rosen in the dielectric and protective layers of Buckingham because Rosen teaches that giving layers high thermal conductivity for heat dissipation purposes is known to the art and because Buckingham already teaches the conventionality of a low thermal conductivity of the optical recording medium, introducing coating layers having a low thermal conductivity for regulating heat dissipation would have been obvious, absent any evidence to the contrary. Applicant continues the argument that one would not apply the teaching of a layer of low thermal conductivity to Buckingham to prevent substrate deformation, as no substrate exists in



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the air incident disk of Buckingham. This is not true because, Buckingham discloses an optical recording element comprising a substrate and a recording medium layer (column 3, lines 65-66). Applicant argues the cited references do not teach or suggest an air-incident optical recording medium comprising a coating system of layers having a thermal conductivity that maintains the coating system of layers at a temperature that ~~does not cause more evaporation during read and write operations of the same coating~~ system of layers and of molecules adsorbed therein from an ambient atmosphere than absent the read and write operations. "A coating system of layers having a thermal conductivity that maintains the coating system of layers at a temperature that does not cause more evaporation during read and write operations of the same coating system of layers and of molecules adsorbed therein from an ambient atmosphere than absent the read and write operations" is directed to a product by process. "Even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 227 USPQ 964, 966. The claim language 'that maintains the coating system of layers at a temperature that does not cause more evaporation during read and write operations of the same coating system of layers and of molecules adsorbed therein from an ambient atmosphere than absent the read and write operations' offers no positive merit or requisite degree of conductivity to the claim itself.

The arguments in regards to rejection under 35 USC 103(a) as being unpatentable over Rosen et al. (U.S. 5,761,188) in view of Lee et al. (U.S. 5,729,393) have been considered but are unpersuasive. Applicant argues there is no motivation to combine the teachings of Rosen and Lee because a substrate incident disk, such as that disclosed in Rosen, is not sensitive to modulation and readout by an optical beam directed through a flying optical head. Applicant lacks support for this argument. Furthermore, Lee teaches an air bearing assembly with a solid immersion lens (SIL) having a bottom surface facing the disk (column 1, lines 44-47) where the SIL is mounted to the slider (column 1, line 67) which is combined with Rosen to show 'An air-incident optical recording medium compatible with a flying optical head' is not an improvement over the prior art. Applicant claims 'An air-incident optical recording medium compatible with a flying optical head' which is shown the rejection of Rosen in view of Lee. Applicant argues Rosen does not teach an air incident optical recording medium. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant argues Rosen teaches a thickness of 600 um versus 1 um. Thickness is an optimizable feature. It is obvious to optimize components in a recording medium. *In re Aller* 105 USPQ 223 and *In re Boesch* 617 USPQ 215. In response to applicant's argument that Lee is completely silent with respect to specific features of the optical disk, the test for obviousness is not whether the features of a secondary reference may

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be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references.

Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

### **Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Ferguson whose telephone number is (703) 305-9978. The examiner can normally be reached on Monday through Friday 8:30 AM – 4:30PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on (703) 308-0449. Please allow the examiner twenty-four hours to return your call.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-2351.



Lawrence D. Ferguson  
Examiner  
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